ADDENDUM NO. 2
Joint Antelope Valley Authority (JAVA)
State Project CM-55 (144) Control No. 11215e
JAVA Project 880106
City of Lincoln Project 780106
Specification No. 04-227
Big T Roadway Project
September 3, 2004

TO ALL PROSPECTIVE BIDDERS:

Bidders are instructed to attach this Addendum No. 2 to the inside cover of their contract folder and to **sign and fax this page back to Mary Matson (402-441-6513)** as evidence that the Addendum has been received. Failure to do so may result in rejection of the bid.

Received By:

The Contract Documents and Specifications for the above project is amended as follows:

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Joint Antelope Valley Authority (JAVA)
State Project CM-55 (144) Control No. 11215e
JAVA Project 880106
City of Lincoln Project 780106
Specification No. 04-227
Big T Roadway Project
September 3, 2004

1. Refer to the Contract Document - Proposal for Contract Construction Work – Schedule of Items (Bid Tab)

   Revise the existing Schedule of Items (Bid Form) as part of this Addendum.

   Miscellaneous Items:

   Pay Item No. 314: "4" Grout Filled Fabric Channel Liner (In Place)"
   Units on this item (41,493) should be SF, not SY as shown.

   Pay Item No. 362: "24" Corrugated Metal Pipe" – Revise the approximate quantity of 5,552 LF to 5,612 LF.

   Add the following Pay Item No. 391A: "Remove Sheet Pile", approximate quantity is 1 LS.

2. Refer to the Specifications – Pavement Marking 15000

   Add the following notes to the "Pavement Marking 15000":

   NOTE: All Existing Markings MUST be Removed.
   All Proposed Markings Shown shall be Recessed a Minimum of 40 mil.
   Existing Crosswalk Removal is NOT a Pay Item.

   All double yellow marking lines will have a 4" gap between the two yellow marking lines with a maximum deviation of 1".

   Crosswalk Markings shall meet the Durable Retroreflective Liquid Polyurea Pavement Markings Specification (15000)

3. Refer to the Specifications

   Add the following Specification Section, "Pavement Marking Specification 1200" to the Specifications: **See Attached Section 1200**

   Add the following notes to the "Pavement Marking Specifications 1200":

   NOTE: All Existing Markings MUST be Removed.

All Proposed Markings Shown shall be Recessed a Minimum of 40 mil.
Existing Crosswalk Removal is NOT a Pay Item.

All double yellow marking lines will have a 4" gap between the two yellow marking lines with a maximum deviation of 1".

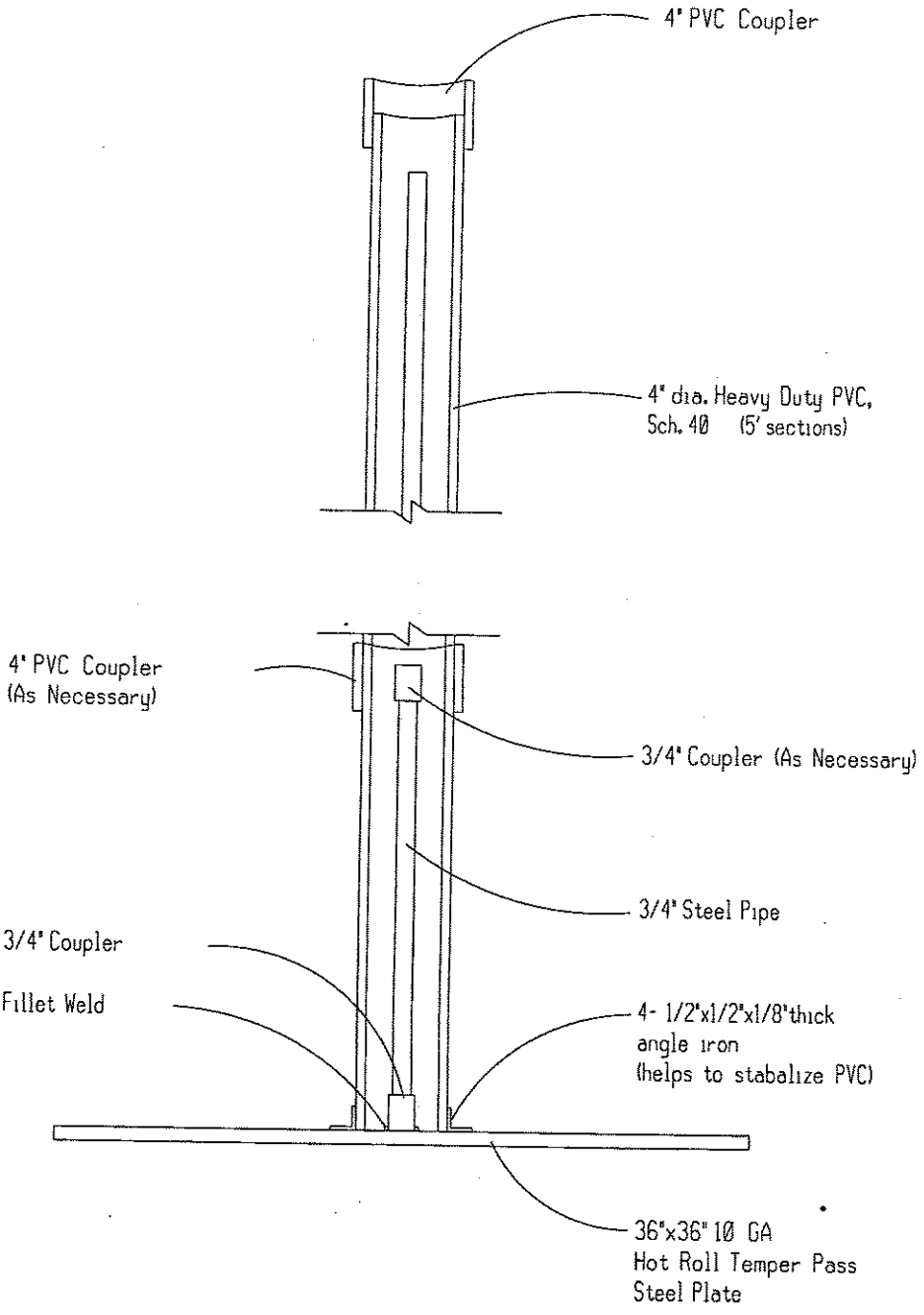
All Longitudinal Markings shall be the Durable, Retroreflective, Liquid Pavement Markings with Reflective Elements for improved Retroreflectivity (1200).

4. Refer to Plan Sheet 2-N12

Refer to Chain-Link Fence Detail; top label refers to 'Top Rail or Tension Wire.' Label should read 'Top Rail' not 'Top Rail or Tension Wire'- tension wire will not be accepted on any permanent fence installations.

5. Refer to Plan Sheet 339 – Settlement Plate Details

Delete settlement plate details from sheet 339 and refer to Settlement Plate Detail **(See Attached)**.



Settlement Plate Detail

OLSSON ASSOCIATES
ENGINEERS - PLANNERS - SCIENTISTS - SURVEYORS
1111 LINCOLN MALL - LINCOLN, NEBRASKA 68508
PH. 402-474-6311 - FAX 402-474-5160

FIGURE
1

SPECIFICATION FOR DURABLE, RETROREFLECTIVE, LIQUID PAVEMENT MARKINGS WITH REFLECTIVE ELEMENTS FOR IMPROVED RETROREFLECTIVITY

I. DESCRIPTION

A. This work shall consist of furnishing and installing retroreflective liquid pavement markings in accordance with this provision and in reasonably close conformance to the dimensions and lines shown on the plans or established by the engineer.

B. The liquid marking material shall be applied by spray method onto asphaltic cement concrete and Portland cement concrete surfaces. Following an application of composite reflective elements and glass beads, and upon curing, the resulting marking shall be an adherent reflectorized stripe of the specified thickness and width that is capable of resisting deformation by traffic.

II. MATERIALS

A. Polyurea

1. Composition Requirements:

1.1 The polyurea coating shall be formed by the reaction of two components. At least one component shall be composed of secondary amines, pigments and fillers as needed to meet performance requirements of this specification. Composition shall be specifically formulated for use as a durable pavement marking material and for application at elevated temperatures not exceeding 150°F. The liquid markings shall consist of a two-component (Part A and Part B), 100% solids polyurea film formulated and designed to provide a simple volumetric mixing ratio (e.g. three volumes of Part A to one volume of Part B). The markings shall consist of white or yellow films with clear and/or yellow-tinted microcrystalline ceramic elements and glass beads incorporated to provide immediate and continuing retroreflection. These films shall be manufactured without the use of lead chromate pigments or other similar, lead-containing chemicals. The white polyurea shall contain not less than 13% by weight rutile titanium dioxide pigment to ensure adequate opacity, hiding power and reflective properties.

B. Reflective Media

The reflective media shall be made up of reflective elements and glass beads for drop-on application and shall conform to the following requirements:

1. The composite reflective elements shall be composed of a titania opacified ceramic core having clear and/or yellow tinted microcrystalline ceramic

beads embedded to the outer surface. These elements and glass beads, when properly applied at the specified coating weight will provide immediate and continuing retroreflection.

2. Index of Refraction - All microcrystalline ceramic beads bonded to reflective elements shall have a minimum index of refraction of 1.8 when tested using the liquid oil immersion method.

2.1 Testing Procedure For Refractive Index Of Beads By Liquid Immersion

2.1.1 Equipment Required:

2.1.1.1 Microscope (minimum 100X magnification).

2.1.1.2 Light Source - preferably sodium light or other monochromatic source, but not absolutely essential.

2.1.1.3 Refractive Index Liquids.*

2.1.1.4 Microscope Slide and Slide Cover.

2.1.1.5 Mortar and Pestle.

* Available from R.P. Cargille Laboratories, Inc., Cedar Grove, NJ.

2.2.1 Procedure:

2.2.1.1 Using the mortar and pestle, crush a few representative beads and place a few of these crushed particles on a microscope slide.

2.2.1.2 Place a drop of a refractive index liquid, with an index as close to that of the crushed particles as can be estimated, on the particles.

2.2.1.3 Cover the slide with a microscope slide cover and view the crushed particles by transmitted light normal to the slide surface (illuminated from the bottom).

2.2.1.4 Adjust the microscope mirror to allow a minimum light intensity for viewing. This is particularly important if sodium light is not used.

2.2.1.5 Bring a relatively flat and transparent particle into focus.

2.2.1.6 By slightly raising and lowering the objective (microscope tube), look for one or both of the following:

2.2.1.6.1 Becke Line - This light line will appear to move either into the particle or away from it. In general, if the objective is raised, the line will move toward the material of higher refractive index; if the objective is lowered, the line will move toward the material of lower index.

2.2.1.6.2 Variation in Particle Brightness - When raising the objective from a sharp focus, the particle will appear to get brighter or darker than the surrounding field. If it becomes brighter, the particles have a higher refractive index than the liquid. If it becomes darker, the glass has a lower refractive index than the liquid. In both cases, the opposite will be true if the objective is lowered.

2.2.1.7 This test can be used to confirm that the beads are above or below a specified index. It can also be used to give an accurate determination of the index (+ or - 0.001). This is done by using several refractive index liquids until a match or near match of indices occurs. The index of the glass will equal that of the liquid when no Becke line and no variation in bead brightness observed.

The size and quality of the beads shall be such that the performance requirements for the retroreflective material shall be met.

Acid Resistance: A sample of microcrystalline ceramic and glass beads supplied by the manufacturer, shall show resistance to corrosion of their surface after exposure to a 1% solution (by weight) of sulfuric acid. The 1% acid solution shall be made by adding 5.7cc of concentrated acid into 1000cc of distilled water. CAUTION: Always add the concentrated acid into the water, not the reverse.

Place 10g of the beads in a 100ml beaker and cover with 30 to 40ml of the 1 weight percent sulfuric acid solution. Cover the beaker to prevent evaporation and allow the sample to be exposed for 24 hours under these conditions. Then decant the acid solution, rinse the beads with fresh DI water and dry the sample in a 150° F (66° C) oven for approximately 15 minutes or until the sample is dry. Microscopic examination (20X) shall show no more than 15% of the beads having a formation of a very distinct opaque white (corroded) layer on their entire surface.

C. End Product Requirements

1. Composition: The retroreflective pavement markings shall consist of a mixture of high-quality resins, curing agent and pigments, with a reflective layer of glass beads and reflective elements with microcrystalline ceramic beads bonded to the top surface.

2. Reflectance: Because of normal variances in materials, pavement surfaces, application equipment, and measurement instruments, the initial retroreflectance of the marking will vary from one installation to the next. When the marking is applied according to the manufacturer's recommendations, the initial retroreflection averaged over many installations shall be at least 900 [$(mcd(ft^{-2})(fc^{-1}]$ for white and 700 [$(mcd(ft^{-2})(fc^{-1}]$ for yellow. The standard deviation of initial retroreflectance for many installations shall be no more than 130 [$(mcd(ft^{-2})(fc^{-1}]$ for both white and yellow. The manufacturer shall provide sufficient evidence that these values can be met. The striper shall bear responsibility for meeting these requirements.

   The initial retroreflectance of a single installation shall be the average value determined according to the measurement and sampling procedures outlined in ASTM D 6359, using a 30 meter retroreflectometer. The 30 meter retroreflectometer shall measure the coefficient of retroreflected luminance, R_L, at an observation angle of 1.05 degrees and an entrance angle of 88.76 degrees. R_L shall be expressed in units of millicandelas per square foot per foot-candle [$(mcd(ft^{-2})(fc^{-1}]$. The metric equivalent shall be expressed in units of millicandelas per square meter per lux [$mcd(m^{-2})(lux^{-1}]$.

III. APPLICATION EQUIPMENT

A. The equipment shall be certified by the manufacturer as suitable for the application of the polyurea and reflective media. The striping equipment shall bear a decal identifying it as manufacturer certified.

B. At any time throughout the duration of the project, the Contractor shall provide free access to his application equipment for inspection by the Engineer, his authorized representative, or the materials representative.

IV. APPLICATION

A. Atmospheric Conditions

1. The pavement markings shall only be applied during conditions of dry weather and subsequently dry pavement surfaces. At the time of installation the pavement surface temperature and the ambient temperature shall be above 40° F. The Engineer shall determine the atmospheric conditions and pavement surface conditions that produce satisfactory results.

B. Surface Preparation

1. At the time of application all pavement surfaces shall be free of moisture, oil, dirt, dust, grease and similar foreign materials. In addition, concrete curing compounds on new Portland cement concrete surfaces and existing pavement markings on both concrete and asphalt surfaces shall be removed. The Contractor shall clean the pavement surface to the satisfaction of the Engineer and the Material Manufacturer. LPM 1200 may be applied on new pavement surfaces, over temporary paint or as a replacement for existing markings after they have been thoroughly removed.

C. Application

1. The markings shall be applied in accordance with the manufacturer's installation instructions. Marking configurations shall be in accordance with the "Manual on Uniform Traffic Control Devices."

2. The reflectorized pavement markings shall be placed only on properly prepared surfaces and at the widths and patterns designed on the contract plans. Marking operations shall not

3. Skid Resistance: The surface of the retroreflective marking shall provide an initial average skid resistance value of 45 BPN when tested according to ASTM E303.

4. Color and Weathering Resistance: The mixed polyurea compound, both white and yellow, when applied to a 3" x 6" aluminum panels at 15±1 mil in thickness with no glass beads and exposed in a Q.U.V. Environmental Testing Chamber, as described in ASTM G-53-77, shall conform to the following minimum requirements. The color of the white polyurea system shall not be darker than Federal Standard No. 595A-17778. The color of the yellow polyurea system shall be reasonably close to Federal Standard No. 595A-13538.

5. Drying Time (Laboratory): When tested in accordance with ASTM D-711 the polyurea marking material shall reach a no-pick-up condition in 5 minutes or less. This test shall be performed with ASHTO Type 1 beads coated at a coverage of 0.099 pounds per square foot.

6. Dry Time Field: When installed at 77° F, at a wet film thickness of 15±1 mils and reflectorized with glass beads, the polyurea markings shall reach a no-track condition in less than 3 minutes. Dry to "no-tracking" shall be considered as the condition where no visual deposition of the polyurea marking to the pavement surface is observed when viewed from a distance of 50 feet, after a traveling vehicle's tires have passed over the line.

7. Adhesion to Concrete: The polyurea pavement marking materials, when tested according to ACI Method 503, shall have such a high degree of adhesion to the specified concrete surface that there shall be a 100% concrete failure in the performance of this test. The prepared specimens shall be conditioned at room temperature (75° ± 2° F) for a minimum of 24 hours and maximum of 72 hours prior to the performance of the tests indicated.

8. Adhesion to Asphalt: The polyurea pavement marking materials, when tested according to ACI Method 503, shall have such a high degree of adhesion to the specified asphalt surface that there shall be a 100% asphalt failure in the performance of this test. The prepared specimens shall be conditioned at room temperature (75° ± 2° F) for a minimum of 24 hours and maximum of 72 hours prior to the performance of the tests indicated.

begin until applicable surface preparation work is completed and approved by the Engineer.

3. The pavement markings shall be applied at a minimum uniform wet thickness of 15 mils for standard smooth surface asphalt mixes and Portland concrete cement surfaces and 20 mils for open grade friction course asphalt mixes. Reflective elements and glass beads shall be applied at a rate specified by the manufacturer.

4. Using the application equipment the pavement markings shall be applied in the following manner, as a simultaneous operation.

   4.1 The surface is air-blasted to remove any dirt and residues if present.

   4.2 The resin, mixed and heated in accordance with the manufacturer's recommendations, is sprayed onto the pavement surface.

   4.3 The specified reflective media is dropped onto the liquid marking at the following rate:

   Glass beads as specified by the manufacturer shall be applied at a rate of 0.026 pounds per 4 inch lineal foot (12 grams per 4 inch lineal foot).

V. CONTRACT UNITS AND BASIS FOR PAYMENT

A. Linear pavement markings will be measured in linear feet complete-in-place for the width specified.

B. Retroreflective markings will be paid for at the contract unit price, which shall be full compensation for cleaning and preparing the pavement surface, for furnishing and placing all materials, and for all materials, labor, tools, equipment and incidentals necessary to complete the work.

Payment will be made under:

Pay Item	Pay Unit
Durable Reflectorized Pavement Stripes	Linear Feet
Surface Preparation for Reflectorized Pavement Stripes	Linear Feet

JOINT ANTELOPE VALLEY - BIG T ROADWAY
SPEC. NO 04-227

BID DATE: SEPTEMBER 8, 2004

PRICE: $145.00 + 10.15 TAX = $155.15

	CONTRACTOR	VERIFICATION FORM
1.	Speece Lewis Engineer 3534 South 48th, Suite 4 Lincoln NE 68506 - 483-5466 fax: 483-1722	☐
2.	United Contractors 6678 NW 62nd Ave Johnston IA 50131 - 515-276-6162 fax: 515-276-3053	☐
3.	Ames Construction 18450 East 28th Avenue Aurora CO 80011 - 303-363-1000 fax: 303-363-4101	☐
4.	Hawkins Construction 317 South 12th Street, Suite 100 Lincoln NE 68508 - 402-476-0144 fax: 476-0175	☐
5.	SSL Retaining Walls 4740 Scotts Valley Drive Scotts Valley CA 95066- 831-430-9300 fax: 831-430-9340	☐
6.	TCW Construction 141 'M' Street Lincoln NE 68508- 402-475-5030 fax: 475-5049	☐
7.	Pavers, Inc. 12303 Highway 6 Waverly NE 68506 402-786-5900 fax: 402-786-5920	☐
8.	Foster GeoTechnical 1372 Old Bridge Road, Suite 101 Woodbridge VA 22192 703-499-9818 v: 630-954-1450 fax: 630-954-1429	☐
9.	Garcia-Chicoine Enterprises	☐

PO Box 81097
Lincoln NE 68501- 402-434-5444 fax: 434-5445

JOINT ANTELOPE VALLEY - BIG T ROADWAY
SPEC. NO 04-227

BID DATE: SEPTEMBER 8, 2004

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	CONTRACTOR	VERIFICATION FORM
10.	M E Collins PO Box 83 Wahoo NE 68066 402-443-3663 fax: 402-443-5013	☐
11.	Dobson Bros. Construction 410 South 7th Street Lincoln NE 68501- 402-474-5115 fax: 402-435-4002	☐
12.	Capitol Contractors 1001 North 9th Street Lincoln NE 68501-476-1021 fax: 476-8033	☐
13.	Brandt Excavating 404 Hill Street Lincoln NE 68502 - 402-474-4113 fax: 474-4116	☐
14.	Christensen Bros. 4740 Scotts Valley Drive Scotts Valley CA 95066- 831-430-9300	☐
15.	Shaw Enterprises 2221 Justin Road Flower Mound TX 75028 817-490-1924	☐
16.	LeGrande Excavating 7601 So. 1st Street Lincoln NE 68512- 402-423-5370 fax: 423-5370	☐
17.	H.R. Bookstrom 3250 Leigthon Ave	☐

Lincoln Ne 68504- 402-464-4342 fax: 464-4846

18. Constructors, Inc.
1815 "Y" Street ☐
Lincoln Ne 68508- 402-434-1212 fax: 434-1799

JOINT ANTELOPE VALLEY - BIG T ROADWAY
SPEC. NO 04-227

BID DATE: SEPTEMBER 8, 2004

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	CONTRACTOR	VERIFICATION FORM
19.	Christentsen Bros., Inc. Box 478 Cherokee IA 51012- 712-225-6146 fax: 712-225-6148	☐
20.	Commercial Contractors PO Box 81036 Lincoln NE 68501 476-1711 fax: 476-1712	☐
21.	Hansen Construction Co. PO Box 83674 Lincoln NE 68501 435-0163 fax: 435-6509	☐
22.	Nemaha Nursery 430 W. Pioneers Lincoln NE 68522- 402-434-5488 fax: 434-5487	☐
23.	Midwest Fence 8000 Serum Ave Ralston NE 68127 402-331-4803 fax: 402-331-4803	☐
24.	Commonwealth Electric 1901 "Y" Street Lincoln NE 68503- 402-474-1341 fax: 474-0114	☐
25.	Rinker Materials 902 Allied Road LaPlatte NE 68123	☐
26.	Watts Electric 3211 NW 39th Street	☐

Lincoln NE 68524- 402-499-7440 fax:

27. A M Cohron
PO Box 479 ☐
Atlantic IA 50022- 712-243-2448 fax: 712-243-4432

JOINT ANTELOPE VALLEY - BIG T ROADWAY
SPEC. NO 04-227

BID DATE: SEPTEMBER 8, 2004

PRICE: $145.00 + 10.15 TAX = $155.15

	CONTRACTOR	VERIFICATION FORM
28.	Pipe Service, Inc. 2201 Valentinia Denver CO 80231- 303-750-2124 fax:	☐
29.	Hi-Way Products 500 Ash Street Ida Grove IA 51445 712-364-3763 fax:	☐
30.	Banner Rebar 5353 Franklin Street Denver CO 80216 303-298-7822	☐
31.	General Excavating 6701 Cornhusker Hwy Lincoln Ne 68507- 402-467-1627 fax: 467-2084	☐
32.	Rupert Construction 8316 Blondo Street Omaha NE 68134- 402-397-2493	☐
33.	Sioux City Foundry 801 Division Street Sioux City IA 51102- 888-258-7016 fax: 712-252-4197	☐
34.	J.D. Steel 6790 SE Yankee Ridge Road Polo MO 64671- 660-354-3150 fax:	☐
35.	Metal Pros 4323 Bounous Street Wichita KS 67209- 316-942-2238 fax:	☐

36. Land Construction
5905 West "O" Street ☐
Lincoln NE 68528- 402-477-8193 fax: